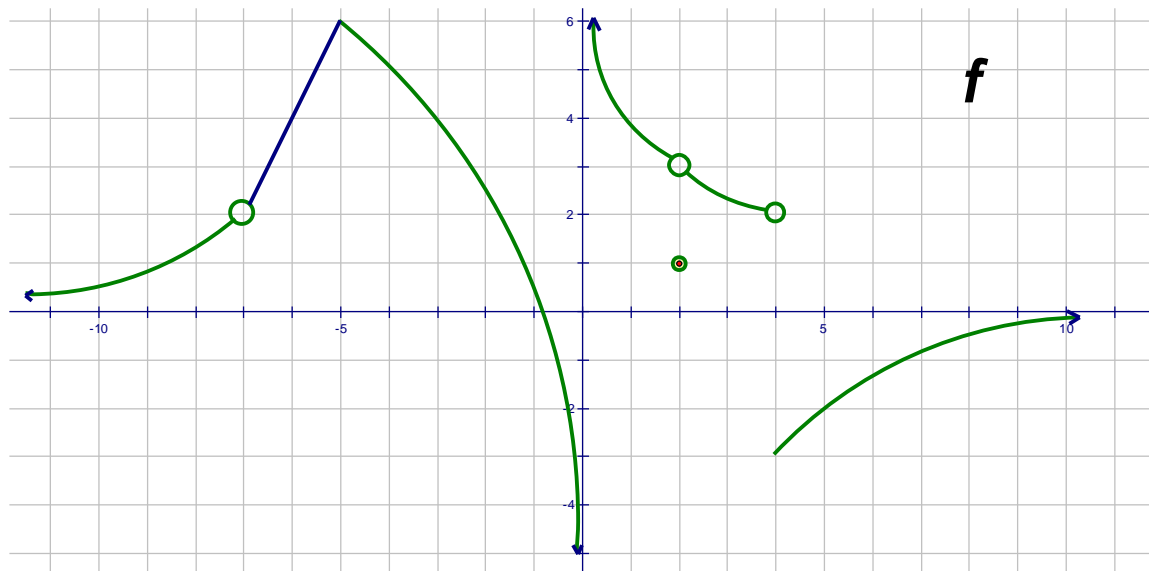


I. The graph of a function f is shown below.



Answer the following questions about function f .

- | | | |
|---|--|---------------------------------------|
| 1. $f(-5) =$ | 2. $f(2) =$ | 3. $f(4) =$ |
| 4. $\lim_{x \rightarrow -7} f(x) =$ | 5. $\lim_{x \rightarrow -5} f(x) =$ | 6. $\lim_{x \rightarrow 2} f(x) =$ |
| 7. $\lim_{x \rightarrow 4} f(x) =$ | 8. $\lim_{x \rightarrow 0} f(x) =$ | 9. $\lim_{x \rightarrow 0^-} f(x) =$ |
| 10. $\lim_{x \rightarrow 0^+} f(x) =$ | 11. $\lim_{x \rightarrow 4^+} f(x) =$ | 12. $\lim_{x \rightarrow 4^-} f(x) =$ |
| 13. $\lim_{x \rightarrow -\infty} f(x) =$ | 14. $\lim_{x \rightarrow \infty} f(x) =$ | |

15. Use the definition of a continuous function at a number to answer the following.

- a. f is not continuous at $x = -7$ because: _____
- b. f is not continuous at $x = 2$ because: _____
- c. f is not continuous at $x = 4$ because: _____

II. For the following problems, sketch a graph of a function that has the indicated features and write an equation for the function that has these features. The function may be a piecewise.

1. The function is continuous at $x = 3$, but has a cusp there.	2. The function has a limit as x approaches 3 but fails to be continuous there because $f(3)$ is undefined.
3. The function has a limit as x approaches -1, has a value for $f(-1)$, but still is not continuous there.	4. The function has no limit as x approaches 0, but $f(0)=3$.
5. The function has a limit of 2 as x approaches 0 from the right, but has no limit as x approaches 0 from the left.	6. The function has a step (or jump) discontinuity at $x = 1$, and $f(1) = 6$.
7. The function has a limit as x approaches 2 of 5 but $f(2) = 4$.	8. The function has a right-hand limit of -2 and a left-hand limit of 2 as x approaches -1.